



**Missouri Department of Natural Resources**  
**Blue River - WBID 0417**  
**Water Chemistry and Bacterial Data, 1999-2003**

Org	Site	Site Name	Yr	Mo	Dy	Time	H	Flow	C	DO	pH	SC	NH3N	SO4	Cl	FC	Ecoli	Recreational Season	
																		Log FC	Log Ecoli
USGS	417/5.5	Blue R. at 12th Street	1999	1	27	1230		51	6	11.1	7.7	1060	0.53				970		
USGS	417/5.5	Blue R. at 12th Street	1999	2	18	1000		224	6	5.8	8.1	765	0.25				1010		
USGS	417/5.5	Blue R. at 12th Street	1999	5	10	1030		249	19	7.8	7.8	680	0.19				700		6.55
USGS	417/5.5	Blue R. at 12th Street	1999	6	18	930		155	20	6.6	7.4	520	0.12				10500		9.26
USGS	417/5.5	Blue R. at 12th Street	1999	8	19	1530		41	28	6.7	7.7	660	0.22		56		530		6.27
USGS	417/5.5	Blue R. at 12th Street	1999	10	14	1030	9	31	16	9.9	7.9	855	0.0099				350		5.86
USGS	417/5.5	Blue R. at 12th Street	1999	11	23	915	7						0.0099		69				
USGS	417/5.5	Blue R. at 12th Street	1999	11	23	130	8						0.11		45				
USGS	417/5.5	Blue R. at 12th Street	1999	12	9	1415	7						0.37		34				
USGS	417/5.5	Blue R. at 12th Street	1999	12	10	30	5						0.35		42				
USGS	417/5.5	Blue R. at 12th Street	1999	12	21	1430	8	60	3	12.3	7.1	895	0.35		77		1550		
USGS	417/5.5	Blue R. at 12th Street	2000	2	15	1215	9	30	8	15.9	7.4	1250	0.59				0.499		
USGS	417/5.5	Blue R. at 12th Street	2000	2	25	1630	8						0.52		97				
USGS	417/5.5	Blue R. at 12th Street	2000	2	26	200	7						0.47		117				
USGS	417/5.5	Blue R. at 12th Street	2000	4	11	1445	8	34	12	9.3	7.6	870	0.03				1300		7.17
USGS	417/5.5	Blue R. at 12th Street	2000	5	3	1220	8	42											
USGS	417/5.5	Blue R. at 12th Street	2000	5	9	900	8						0.41		69				
USGS	417/5.5	Blue R. at 12th Street	2000	5	9	1715	7						0.34		66				
USGS	417/5.5	Blue R. at 12th Street	2000	5	10	445	5						0.3		84				
USGS	417/5.5	Blue R. at 12th Street	2000	5	26	840	8						0.62		38				
USGS	417/5.5	Blue R. at 12th Street	2000	5	26	1730	7						0.22		59				
USGS	417/5.5	Blue R. at 12th Street	2000	6	14	1215	7						0.2		32				
USGS	417/5.5	Blue R. at 12th Street	2000	6	14	130	8						0.34		26				
USGS	417/5.5	Blue R. at 12th Street	2000	6	30	930	5	68	23	5.9	7.4	685	0.14				2200		7.70
USGS	417/5.5	Blue R. at 12th Street	2000	7	12	515	7						0.17		40				
USGS	417/5.5	Blue R. at 12th Street	2000	7	17	1100	7						0.59		22				
USGS	417/5.5	Blue R. at 12th Street	2000	7	27	930	7						0.0099		44				
USGS	417/5.5	Blue R. at 12th Street	2000	7	28	2300	7						0.19		33				
USGS	417/5.5	Blue R. at 12th Street	2000	8	22	1300	9	30	28	6.4	7.8	945	0.16				5500		8.61
USGS	417/5.5	Blue R. at 12th Street	2000	9	23	345	8						0.24		43				
USGS	417/5.5	Blue R. at 12th Street	2000	9	23	1115	7						0.26		28				
USGS	417/5.5	Blue R. at 12th Street	2000	10	5	1200	7						0.24		20				
USGS	417/5.5	Blue R. at 12th Street	2000	10	5	1845	7						0.19		37				
USGS	417/5.5	Blue R. at 12th Street	2000	10	5	530	8						0.19		40				
USGS	417/5.5	Blue R. at 12th Street	2000	10	6	400	5						0.2		50				

Org	Site	Site Name	Yr	Mo	Dy	Time	H	Flow	C	DO	pH	SC	NH3N	SO4	Cl	FC	Ecoli	Log FC	Log Ecoli
USGS	417/5.5	Blue R. at 12th Street	2000	10	11	1230	9	36	11	14.2	7.5	760	0.23				2600		7.86
USGS	417/5.5	Blue R. at 12th Street	2001	8	29	1400		44	28.5	7.7	8	675	0.07						
USGS	417/5.5	Blue R. at 12th Street	2001	10	31	1345		29	13.3	12.6	8.1	935	0.07				180		5.19
USGS	417/5.5	Blue R. at 12th Street	2001	12	11	1430		41	6.6	13.6	8	965	0.91				460		
USGS	417/5.5	Blue R. at 12th Street	2002	3	4	1130		64	1.2	14	7.9	1440							
USGS	417/5.5	Blue R. at 12th Street	2002	3	14	1500		66	14.6	11.8	8.1	1010	0.29	87	145		170		5.14
USGS	417/5.5	Blue R. at 12th Street	2002	6	20	1400		48	29.4	12.8	8.3	705	0.09				310		5.74
USGS	417/5.5	Blue R. at 12th Street	2002	8	6	1120		31	29.2	6.1	7.7	850	0.12				285		5.65
USGS	417/5.5	Blue R. at 12th Street	2002	9	9	1106		24	26.1	5.9	7.6	940							
USGS	417/5.5	Blue R. at 12th Street	2002	10	23		W	189				580	0.18		58				
USGS	417/5.5	Blue R. at 12th Street	2002	10	24		W												
USGS	417/5.5	Blue R. at 12th Street	2002	10	27		W												
USGS	417/5.5	Blue R. at 12th Street	2002	10	27		W	198				475	0.0199		41				
USGS	417/5.5	Blue R. at 12th Street	2002	11	7	1015		47	8.3	10.4	7.6	810	0.28			2300	1500		
USGS	417/5.5	Blue R. at 12th Street	2003	2	12	1230		24	3.6	15.6	8.1	1330	0.75	149	219	300	200		
																	<b>Geomean</b>		854.13
																	<b>Log Mean</b>		6.75
																	<b>Log Std. Deviation</b>		1.36
																	<b>Sample Size</b>		12

The water quality standard for *E. coli* in Class B whole body contact recreational waters for the protection of human health is 548 col/100 mL. The standard is for the geometric mean of all bacterial counts taken during the recreational season, April 1 through Oct. 31. For *E. coli*, a water is judged to be unimpaired if the 60 percent Upper Confidence Limit (UCL) on the mean is less than the appropriate water quality standard. The formula for the 60 percent UCL is:

$$60\% \text{ UCL} = (\text{sample mean}) + ((0.253)(\text{standard deviation})/(\text{square root of sample size}))$$

The *E. coli* data is normalized by natural log transformation and the UCL calculations are as follows:

$$E. coli \text{ 60\% UCL} = (6.75) + ((0.253)(1.36)/(3.46)) = 6.85 \quad \text{Anitlog of 6.85} = \boxed{943.45}$$

Since 943.45 is more than the Class B *E. coli* standard of 548, this water is judged to be **impaired** by bacteria.

Note: There is a lack of sufficient data since 2001 to make a scientifically defensible assessment. Data prior to 2001 was included in this assessment because the department knows of no pollution controls established that would make the data unrepresentative of current conditions.

Missouri Department of Natural Resources, Water Protection Program, (573) 751-1300, [www.dnr.mo.gov](http://www.dnr.mo.gov)  
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